Hospital Topics

Special Diets in Hospitals: Discrepancy between What is Prescribed and What is Eaten

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Summary

An assessment has been made in four hospitals of the food eaten by 40 patients on special diets restricted in energy, carbohydrate, fat, protein, or sodium. The diets eaten by most patients were significantly different from those prescribed, partly because of patients' unrestricted access to food they possessed or could buy in the ward, but mainly because of the extra or alternative foods provided by ward staff.

Not only may the patients' progress be prevented or hindered by excessive consumption but also the lack of progress may be interpreted as indicating that the dietary treatment has failed rather than that it has not been followed.

Introduction

We have recently shown¹ that if supervision is strict enough obese people given diets of 4.18 MJ/day (1000 kcal/day) invariably lose weight even though they themselves, and in many cases their doctors, have insisted that they could not. Doctors usually believe their patients when they report that they have conscientiously followed their diets, but in some cases the doctors adduce as additional evidence that their patients cannot lose weight the fact that they have failed to do so in hospital under what they assume to be rigid dietary control. This suggests that calorie-restricted diets in at least some hospitals are inadequately supervised and raises the more general question of the extent to which hospital patients on special diets are receiving what has been prescribed for them.

Methods

We examined the food intake of 40 patients on special diets in two London teaching hospitals and two provincial hospitals, each equipped with a diet kitchen and employing at least one qualified dietitian. The total food consumed by each patient was measured for up to seven consecutive days. Each item was weighed or measured and any food remaining at the end of a meal was also weighed. This procedure was followed for

all meals, snacks, and beverages. A record was also kept of food taken by the patient from his bedside locker. The intake of calories and nutrients were calculated from food consumption tables.²

The meals were prepared in the hospital diet kitchens, placed on special trays, and delivered to the wards in special trolleys. Bread and milk were usually sent to the ward daily in measured quantities for each patient to be distributed from the ward kitchen.

We examined the meals of seven patients who were prescribed unquantified low calorie, low fat, or low sodium diets and of 33 patients who were prescribed diets with quantified amounts of calories, carbohydrate, protein, or sodium.

Results

UNQUANTIFIED DIETS

For the unquantified diets we compared what the supposedly restricted patient consumed with what other patients of about the same age consumed in the same wards (table I). The only diet that was satisfactory was the low fat diet, in which the fat consumption of the patient in case 2 at 43 g/day was low by any standard. The intake of most healthy adults is usually 100 g/day or more, and the average intake of patients in the same ward who were not on special diets was 93 g, also well above that of the patient.

TABLE I—Intake of Patients on Unquantified Restricted Diets

Diet	Case No.	No. of Days Observed	Measured Daily Intake	Daily Intake of Control Patients
Low sodium	1	2	3400 mg	2000 mg*
Low fat	2	7	43 mg	93 g
Low calorie	3 (1969)	7	8.81 MJ	7.27 MJ
" "	3 (1971)	7	3.03 MJ	4.93 MJ
" "	4	7	3.85 MJ	4.93 MJ
" "	5	7	3.53 MJ	5.18 MJ
" "	6	7	3.76 MJ	5.18 MJ
" "	7	7	5.98 MJ	4.56 MJ

*This amount of sodium does not include amounts taken from salt shaker provided with meals.

Conversion: SI to Traditional Units
1MJ ≈ 239 kcal.

It is generally accepted that sodium restriction is ineffective unless it is reduced to 2,000 mg sodium a day, and preferably less. The intake of the patient in case 1 was well above this level.

The diet of one patient (case 3) on a "reducing diet" was measured twice, the second time after two years. The intake of the age-matched patients in the same ward was much less at the second assessment, and the patient took more food than the controls on the first occasion and less on the second. Of

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the other four patients on a low-calorie diet three took fewer calories than the controls and one took substantially more.

It is unlikely that the prescribed reducing diet was effective in more than three of the five patients even if we assume that they followed a restricted diet after the period during which we observed them.

QUANTIFIED DIETS

Measurement of the food intake of patients on quantified special diets gives a more precise assessment of the difference between what was intended and what was achieved (table II).

TABLE II—Actual and Prescribed Intakes of 14 Patients on Energy-restricted Diets, Eight on Carbohydrate-restricted Diets, Six on Protein-restricted Diets, and Five on Sodium-restricted Diets

Case No.	No. of Days Observed	Measured Daily Intake			Amount Prescribed
		Hospital	Own Supplies	Total	
<i>Patients on Energy-restricted Diets</i>					
		(MJ)	(MJ)	(MJ)	(MJ)
8	6	0.96	0	0.96	1.25
9	5	3.14	1.55	4.69	1.25
10	7	5.51	0.08	5.60	3.34
11	6	3.43	0.75	4.18	4.18
12	5	4.05	0.19	4.24	4.18
13		4.39	0.79	5.18	4.18
14		5.06	0.29	5.35	4.18
15	7	5.98	0.08	6.06	4.18
16	6	5.64	0.96	6.60	4.18
17	6	4.89	2.30	7.19	4.18
18	2	6.65	0	6.65	6.27
19	4	8.49	0.20	8.70	6.27
20	7	9.36	0	9.36	6.27
21	6	7.98	2.47	10.45	8.36
<i>Patients on Carbohydrate-restricted Diets</i>					
		(g)	(g)	(g)	(g)
22	7	98	47	145	80
23	7	83	51	134	120
24	7	132	5	137	120
25	7	146	11	157	120
26	7	139	80	219	120
27	3	154	33	187	150
28	7	196	59	255	150
29	7	224	2	226	200
<i>Patients on Protein-restricted Diets</i>					
		(g)	(g)	(g)	(g)
30	3	27	0	27	20
31	3	15	0	15	20
32	3	32	0	32	20
33	4	5	0	5	20
34	6	81	7	88	40
35	3	61	0	61	40
<i>Patients on Sodium-restricted Diets</i>					
		(mg)	(mg)	(mg)	(mg)
36	3	380	250	630	480
37	3	600	35	635	480
38	3	490	480	970	480
39	3	2060	0	2060	480
40	3	1450	5000	6450	480

Conversion: SI to Traditional Units
1MJ $\approx$ 239 kcal

Energy-restricted Diets

The patients on energy-restricted diets should have been given 1.25–8.36 MJ (300–2000 calories) daily. One patient (case 8) ate substantially less than the very low prescribed intake, three (cases 11, 12, and 18) ate about the amount that was prescribed, and the remaining 11 ate significantly more than was prescribed, in one case nearly four times as much.

Several patients helped themselves to substantial amounts of food, such as cakes, biscuits, or fruit, from their own lockers or bought food from the mobile shop that visited the ward each day. In six cases much of the extra food—a slice of bread, a plate of thick soup, an extra helping of dessert, or other items from the regular kitchens—was given to the patients by the nurses or ward orderlies. One patient on an energy-restricted diet was moved to a different ward and was given the normal hospital diet for two days before it was realized that a special diet had been prescribed.

Carbohydrate-restricted Diets

All eight patients on carbohydrate-restricted diets consumed

more carbohydrate than was prescribed, and three were eating over half more than they should have been. Again, the patients often ate their own food but sometimes they were given too much food in the wards. One diabetic patient was regularly given porridge with sugar and milk for breakfast though unsweetened fruit or fruit juice had been provided by the diet kitchen. All diabetic patients had sugar bowls placed on their trays by the orderlies though this had been forbidden by the dietitian.

Low-protein Diets

The discrepancies that occurred in six patients on low-protein diets were almost entirely due to the food actually served to them. Four patients took too much protein, one more than twice as much as he had been prescribed. The surplus protein came mainly from wrong foods or wrong quantities supplied by the nurses or ward orderlies rather than from the food sent up from the diet kitchen. The milk allowances measured by the dietitian were rarely used, and milk was given freely. One patient was regularly given cereal and milk for breakfast because he did not like the fruit juice or grapefruit sent up from the diet kitchen. The low-protein bread, which most patients found unpalatable, was often replaced by the ward staff by ordinary bread. One patient was prescribed tomatoes on toast for breakfast, but since no tomatoes were available a boiled egg was provided instead.

Sodium-restricted Diets

Sodium-restricted diets were assessed in five patients whose intake was prescribed at 480 mg/day. Three of the patients were given about this quantity in their diet, and two of them added a little from their own supplies, while the third added as much again as had been prescribed. Thus, two of the patients took about 630 mg but the others took much more. One patient consumed more than 12 times the prescribed quantity.

Again the hospital staff were partly at fault. Low-sodium bread was supplied from the diet kitchen, but was usually replaced by the much more palatable ordinary bread. Items were often given from the trolley serving ordinary hospital food. One of the patients on a sodium-restricted diet was given a kipper for breakfast, and another had whole meals brought into the hospital for him. Sodium restriction was not encouraged by the fact that all patients had salt shakers on their trays.

Discussion

There are clearly wide discrepancies between what patients are supposed to be eating and what they are eating. The discrepancies are greater for diets that leave the patient hungry—diets reduced in energy—or that require the reduction of items that have high appeal—diets reduced in carbohydrate or salt. The restricted and hungry patient will be tempted by the attractive goods in the mobile shop and patients' lockers are likely to hold foods rich in carbohydrate or containing salt, rather than foods rich in protein. There is usually no supervision of the foods that are brought into the ward by the patient or his relatives or friends nor any supervision of what food is in the patient's locker or what he takes from it.

But the fault lies not only with the patient. Several people intervene between the prescription of a diet and its consumption. It begins with the consultant, who instructs the dietitian. The dietitian is responsible for the detailed calculations and construction of the diet and its preparation. The food is sent to the ward, where nurses and orderlies serve it to the patient. Though the diet prepared by the dietitian is sometimes significantly different from that prescribed most errors arise because what is prepared is often not what is given to the patient.

Unpalatable or unavailable items are changed by ward staff for other items that may be very different in composition, or the patient may be given food just because the nurse or orderly has not been told it is forbidden or does not think it important to withhold. Also, the patient is virtually unrestricted in his ability to get foods on his own initiative.

These facts point clearly to the very low importance that is attached by both the nursing staff and the patient to diet as a means of treatment. We have largely abandoned the habit of recommending diets for a wide range of illnesses—diets that were unsound in theory and ineffective in practice. Nevertheless, a modified diet is an important part of effective therapy in several diseases—for example, obesity, diabetes mellitus, and, often, hepatic and renal disease. When a patient does not respond well to an appropriate diet it is clearly important to know whether the diet is ineffective or whether the patient is eating quite a different diet—just as important as it is to know whether the failure of a hypertensive patient to show a reduction in blood pressure is because the hypertensive drug is ineffective or because it is not being taken. If non-treatment is assumed to be ineffectual treatment other and perhaps hazardous treatments may be introduced, such as the use of amphetamines for the control of “refractory” obesity.

The assumption that the diet prescribed is the diet consumed leads also to unwarranted questioning of the theoretical bases of the aetiology of disease and its logical treatment. The failure of dietary treatment in hospital has convinced many doctors that some obese patients can somehow maintain their weight on diets that the physiologist tells us provide significantly less energy than is needed for ordinary dietary maintenance.

Finally, it is disquieting to consider how readily the hospital situation can vitiate the expertise acquired by the therapeutic dietitian during her four-year training, in the course of which she acquires much theoretical knowledge and receives extensive practical instruction in nutrition, food preparation, and basic science. In view of the poor correspondence between the objective and the achievement one wonders whether it has been worthwhile for hospitals to equip expensive diet kitchens, for the dietitian to undergo prolonged and intensive training, and for her then to expend great effort in calculating and preparing meals of precise composition.

Improvement can come about only if the whole chain of people concerned, especially the nurses and orderlies responsible for feeding the patient, are made to understand that the treatment of some diseases by diet is as important as the treatment of other diseases by drugs. Equally, it must be impressed on the patient that treatment with diet may in his condition be more important and more effective than treatment with pills though not surrounded with the semi-magic aura that patients attach to medicines.

Requests for reprints should be sent to Professor John Yudkin, Servier Research Institute, Horsenden Lane South, Greenford, Middlesex.

References

- ¹ Yudkin, J., *Practitioner*, 1972, **209**, 352.
- ² McCance, R. A., and Widdowson, E. M., *The Composition of Foods*. London, H.M.S.O. 1960.

Any Questions?

We publish below a selection of questions and answers of general interest

Yoghourt and Heart Disease

Is yoghurt of any value in the prevention of coronary artery disease?

There is no reason to suppose that yoghurt has any effect in preventing coronary artery disease or, indeed, in the prevention or cure of any other disease. The health-giving virtues of yoghurt have been proclaimed for 60 years and more, largely on the basis of the alleged extraordinary longevity of populations such as those in Bulgaria, who are supposed to eat considerable quantities of it. No evidence has been produced to support any of the claims made for yoghurt.

Care of Mentally Retarded Children

A mother of a mentally retarded child, aged 3, has inquired about a report that monosodium glutaminic acid has been administered to such children with excellent results. Can you offer any advice on the drug treatment of mentally retarded children?

Glutamic acid occupies an important position in the metabolism of the developing and of the mature brain.¹⁻⁴ There is a rational basis for its use in some patients with hepatic encephalopathy and certain other metabolic conditions where damaging concentrations of ammonia occur in body fluids. There is no scientifically acceptable evidence, however, that supplementation of the normal dietary intake of this amino-acid has any pharmacological or nutritional benefit for “brain

damaged” or otherwise neurodevelopmentally abnormal children. Nevertheless, sodium glutamate either by itself or in commercially available mixtures with water-soluble vitamins continues to be popular—especially abroad—for the “treatment” of these conditions. As pharmacologically harmless (though usually very expensive) symbols of therapeutic concern in a situation where doctors can offer little of therapeutic value they may have some place, but their use may also represent a collusory denial by both parents and doctors of incurability. Specifically remediable conditions such as hypothyroidism are comparatively rare. In general, a more open acknowledgement to parents of the truth of the situation is preferable and other more realistic ways of supporting and aiding families of handicapped children must be offered.

- ¹ Weil-Malherbe, H., in *Metabolism and Function in Nervous Tissue*, ed. R. T. Williams, p. 16. London, Cambridge University Press, 1952.
- ² Sellinger, O. Z., et al., *Proceedings of the Royal Society. Series B*, 1962, **156**, 148.
- ³ Woodman, R. S., and McIlwain, H., *Biochemical Journal*, 1961, **81**, 83.
- ⁴ Simbn, G., Drori, J. B., and Cohen, M. M., *Biochemical Journal*, 1967, **102**, 153.

Honey

Honey has been reported as being useful in preventing atherosclerotic disease. Is there any evidence for this claim?

The literature about honey must be as extensive, and as ill-supported, as that about yoghurt in its prophylactic and curative properties. There is nothing whatever to support any of these claims either for atherosclerotic disease or for any other disease.